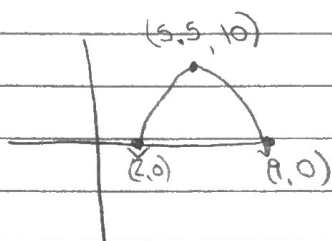


- 1) Graph  $y = 2(x-3)^2 - 8$ , then write the equation in factored & standard forms.
- 2) Graph  $y = \frac{1}{2}(x+4)(x-6)$ , then write the equation in vertex & standard forms.
- 3) Graph  $y = x^2 - 8x + 12$ , then write the equation in vertex & factored form.
- 4) Write the equation of the function below in all forms.



- 5) Factor  $2x^2 - 6x - 8$
- 6) Factor  $7x^2 + 23x + 6$
- 7) Solve for  $x$ :  $\frac{1}{2}x^2 - 2x + 5 = 0$
- 8) Solve for  $x$ :  $-3x^2 - 8x + 9 = 0$
- 9) Find the equation of a parabola with roots at  $2 \pm \sqrt{11}$  in standard form.

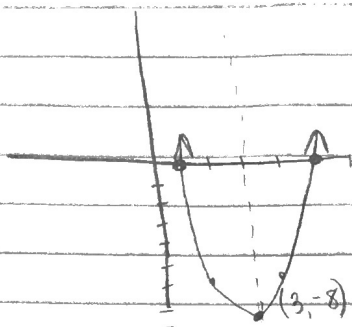
$$1) y = 2(x-3)^2 - 8$$

$$2(x-3)^2 = 8$$

$$(x-3)^2 = 4$$

$$x-3 = 2 \text{ or } x-3 = -2$$

$$x = 5 \text{ or } 1$$

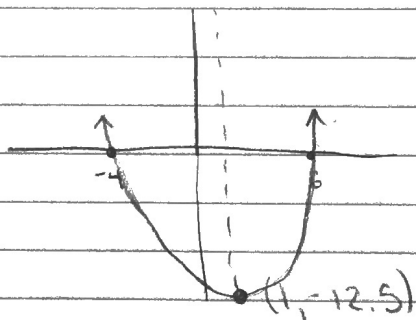


$$y = 2(x-5)(x-1)$$

$$y = 2x^2 - 12x + 10$$

$$2) y = \frac{1}{2}(x+4)(x-6)$$

$$\text{Vertex } (1, -12.5)$$



$$y = \frac{1}{2}(x-1)^2 - 12.5$$

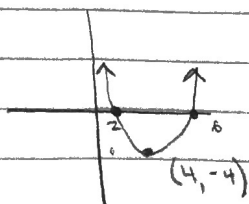
$$y = \frac{1}{2}x^2 + x - 12$$

$$3) y = x^2 - 8x + 12$$

$$\text{vertex} = \frac{8}{2}$$

$$= 4$$

$$(4, -4)$$



$$\text{factored } (x-2)(x-6)$$

$$y = (x-2)(x-6)$$

$$y = (x-4)^2 - 4$$

$$4) y = a(x-2)(x-9)$$

$$10 = a(5.5-2)(5.5-9)$$

$$10 = a(3.5)(-3.5)$$

$$10 = -\frac{49}{4}a$$

$$-\frac{40}{49} = a$$

$$y = -\frac{40}{49}(x-2)(x-9)$$

$$y = -\frac{40}{49}(x-5.5)^2 + 10$$

$$y = -\frac{40}{49}x^2 + 8\frac{48}{49} - 14\frac{34}{49}$$

$$5) 2x^2 - 6x - 8$$

$$2x^2 + 2x - 8x - 8$$

$$2x(x+1) - 8(x+1)$$

$$(2x-8)(x+1)$$

$$\text{or } (x-4)(2x+2)$$

or

$$2(x-4)(x+1)$$

$$6) 7x^2 + 23x + 6$$

$$7x^2 - 21x + 2x + 6$$

$$7x(x+3) + 2(x+3)$$

$$(7x+2)(x+3)$$

$$7) \frac{1}{2}x^2 - 7x + 5 = 0$$

$$x^2 + 4x + 10 = 0$$

$$x^2 + 4x = -10$$

$$(x+2)^2 = -10 + 4$$

$$(x+2)^2 = -6$$

$$x+2 = \pm i\sqrt{6}$$

$$x = -2 \pm i\sqrt{6}$$

$$8) -3x^2 - 8x + 9 = 0$$

$$x^2 + \frac{8}{3}x = 3$$

$$\left(x + \frac{4}{3}\right)^2 = 3 + \frac{16}{9}$$

$$\left(x + \frac{4}{3}\right)^2 = \frac{43}{9}$$

$$\left(x + \frac{4}{3}\right)^2 = \pm \frac{\sqrt{43}}{3}$$

$$x = \frac{4 \pm \sqrt{43}}{3}$$

$$9) (x - 2 + \sqrt{11})(x - 2 - \sqrt{11})$$

$$x^2 - 2x - x\sqrt{11} - 2x + 4 + 2\sqrt{11} + x\sqrt{11} - 2\sqrt{11} - 11$$

$$x^2 - 4x - 7$$